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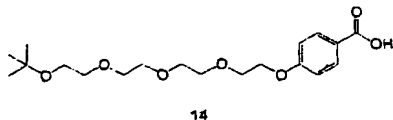
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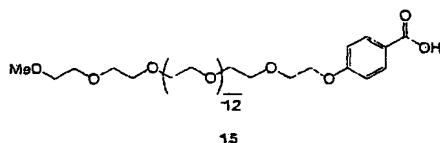
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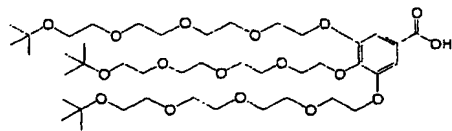
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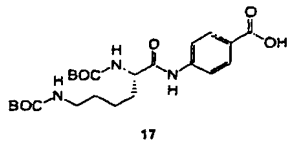
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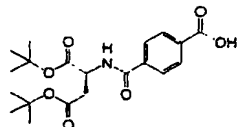
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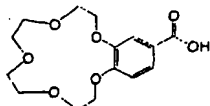
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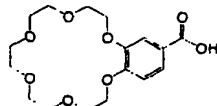
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(57) Abstract: The present invention provides for bola amphiphiles compositions which have more than one lyophilic (hydrophilic) head group and a hydrophobic (hydrophobic) moiety capable of hydrogen bonding with other bola amphiphiles. These bola amphiphiles are capable of self assembling into micelles. The advantage of these bola amphiphiles is that they may self-assemble into micelles whose lyophilic head groups are located within the core and on the surface of the micelles. The lyophilic environment at the core and on the surface of the micelles may be different and may be controlled by the choice of head group moieties on the bola amphiphiles. The utility of these compositions is that they can be used to load or encapsulate polar drugs, DNA, mineralizable inorganic salts, or other molecules of interest within the polar interior of the micelle. Such compositions may also provide small water-filled ion-conducting channels within their structure suitable for use in micro electromechanical devices, as templates for nanowires or dielectrics, and as chemical sensors.